SIGMA

SD1 Merrill

The SIGMA SD1 Merrill
DIGITAL SINGLE LENS REFLEX CAMERA
WITH FULL COLOR IMAGE SENSOR

For photographers
who refuse to compromise.

The SIGMA SD1 Merrill

Inspired modern craftsmanship
Sensor designed in California
Camera made in Japan

SIGMA

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DIGITAL SINGLE LENS REFLEX CAMERA
WITH FULL COLOR IMAGE SENSOR

The Sigma SD1 Merrill, The new benchmark for image quality and camera performance is now within your reach.

Our quest for photographic truth and innovation resulted in the SIGMA SD1.

Breathtaking gradation and rich color fidelity. Image quality on a par with medium-format film cameras. A dream camera able to satisfy the highest expectations of the world's most demanding photographers.

Only one thing remained to be accomplished. That was to bring this remarkable performance within reach of more photographers who wanted the very best. Since our founding this has always been one of our highest priorities with all of our products.

First we pioneer new frontiers, pursuing every possibility.
Then we do everything we can to make the technology accessible.
After a year of hard work, we have attained our mission.

Introducing the SIGMA SD1 Merrill — the camera photographers everywhere have been waiting for.

Transforming leading-edge innovations into the world's next standards. Embodied in products dedicated to everyone who is fascinated by the potential of photography.

The SIGMA SD1 Merrill.
A labor of love, born of a dedication to photographic perfection without compromise.

Camera : SIGMA SD1 Merrill / File Type: X3F Raw, Exposure Mode: P - Program AE, ISO Setting: 100, White Balance: Auto, Shutter Speed: 1/100s, Aperture Value: F2.8 Focal Length: 55 mm | Lens : SIGMA 24-70mm F2.8 IF EX DG HSM

04 Camera : SIGMA SD1 Merrill / File Type: X3F Raw, Exposure Mode: A - Aperture Priority AE, ISO Setting: 100, White Balance: Auto, Shutter Speed: 1/800s, Aperture Value: F7.1 Focal Length: 70 mm | Lens : SIGMA 24-70mm F2.8 IF EX DG HSM

Impeccable image quality. Cutting-edge technology. Our flagship camera has it all

Preserving once-in-a-lifetime moments

Photographs can preserve special moments and breathtaking scenery for eternity. They can also let us express feelings and share ideas.

At Sigma we consider the capture system to be the key factor in photographic performance. After all, photography is meant to reflect truth, and cameras are tools to take photographs. Pursuing the goal of photographic perfection is a matter of creating the ultimate capture system.

Some may say that digital imaging technology has already reached maturity and that further innovation will be insignificant. We, however, beg to differ.

Delivering truly high image quality

When it comes to the capture system at the heart of photography, most digital cameras are treading the same well-worn path, using technology that has hardly changed since digital photography's infancy.

In contrast, Sigma is taking a completely different tack, developing direct-image sensor technology to achieve true progress in the key areas of the capture system and image generation.

Sigma is also the only camera maker committed to perfecting Foveon X3® direct image sensor technology. This full color capture system uses three layers of photodiodes vertically aligned to capture all three primary RGB colors of light at each photosite.

We take this approach because we believe in focusing on innovation that can make a real difference in the quality of photographs.

Pioneering the camera's future with the SIGMA SD1

Ever since its inception, the Foveon X3® direct image sensor has earned a unique reputation for its three-dimensional ambience. The SIGMA SD1 marked another milestone in this dimension of "emotional image quality," producing photographs mesmerizing in their lifelike presence.

Its larger sensor size has triple the pixel count of its predecessor. With the increased resolution of so many more pixels added to the capture system's intrinsically rich image quality, the result is amazingly nuanced gradation and color fidelity.

Such astonishing image quality makes conventional digital cameras pale by comparison. It also clearly indicates the direction Sigma is heading in pursuit of photographic excellence and the ideal camera.

A flagship that puts Sigma's principles into practice

It may look like a standard SLR, but its images have the detail and clarity you might expect from a medium-format film camera. Their vibrant, richly textured realism awakens the desire to take creative photographs.

The good news is that the SD1 Merrill has all the impeccable imaging performance and build-quality of the SD1.

Achieving mass production of such a camera that we could endorse without reservation was no easy task. But when you hold the SD1 Merrill in your hands you will understand why it was worth it.

The sensor was designed in Silicon Valley, the epicenter of semiconductor innovation. The camera is made entirely in-house by Sigma in Japan. This combination of cutting-edge technology and a proud tradition of precision artisanship has produced a creative tool destined to inspire the artistic soul of every serious photographer.

The eye-opening impact of this camera's image quality is the result of an uncompromising devotion to principles and a passion for excellence.

Now it is our pleasure to be able to make such quality available to more photographers than ever before. Our humble hope is that using the SD1 Merrill will stimulate your creative impulse in a way no other camera can.

Astonishing 46MP resolution. Breathtaking gradation and rich color fidelity

Do mega pixels matter?

Today's digital cameras have already reached impressive pixel counts. The figures seem sufficient to generate high-resolution images, and even to withstand scrutiny in enlarged prints. A plausible case is often made that the mega-pixel wars are meaningless because digital cameras already have enough pixels.

The claim gains further support from an understanding that resolution is not determined by pixel count alone. In a photograph, resolution also depends on interactions among many other factors, including lens characteristics, low-pass filter response, noise reduction, and processing of contrast and sharpness parameters. By itself, elevating the pixel count doesn't necessarily lead to an appreciable improvement in picture quality.

Consider the 14MP direct image sensor used in the Sigma SD15 and Sigma DP1/DP2. Despite having a nominal 4.6 million figure for the number of pixel locations, this sensor produces images that are widely recognized as having excellent resolution.

Where resolution and realism meet

Still, Sigma thinks raising the pixel count is desirable and necessary to achieve the most natural image rendition. In digital cameras, the limit of resolution is determined by pixel pitch. When a certain level of detail (spatial frequency) is exceeded in a target object, the camera suddenly loses all ability to resolve it. This phenomenon is one reason why photos that include fine detail can end up looking unnatural.

As an example, say you are shooting a landscape with grass in the foreground and mountains in the background. The thin, closely spaced blades of grass are resolved correctly by the sensor in some areas, but exceed the limit of resolution in others. On the other hand, the ridges and surfaces of the mountains in the distance have a low enough spatial frequency to be resolved correctly throughout. In other words, the foreground would appear partially blurred against a consistently sharp distant background. A human observer would register the opposite: sharply defined blades of grass nearby, and hazy mountains in the distance.

This limit of resolution, which can be at odds with the human visual system, may be an unavoidable fact of physics. But Sigma believes innovation can make the problem so imperceptible that we can realistically pursue and achieve more natural image depiction. If so, we can look forward to being able to shoot images that are minimally affected by enlargement, and that retain a three-dimensional ambience even when viewed in small formats.

Further pursuit of high resolution is worthwhile not to win the pixel wars, and not even to make large-format prints. Rather, Sigma believes it is needed to achieve more natural photographic results.

30MP equivalent "emotional image quality"

The 46MP direct image sensor of the SD1 Merrill is a breakthrough that triples the 14MP resolution of the sensor used in previous generations of Sigma cameras, while retaining the "emotional image quality" that is unique to a full-color capture system.

We enlarged the sensor to APS-C size (1.5x focal length equivalent), while narrowing pixel pitch, thereby dramatically raising the pixel count to 46MP (4,800 x 3,200 x 3).

The luminance resolution of this sensor is, in fact, equivalent to that of a 30MP CFA sensor as measured on the standard B&W resolution chart used in conventional digital camera resolution testing.

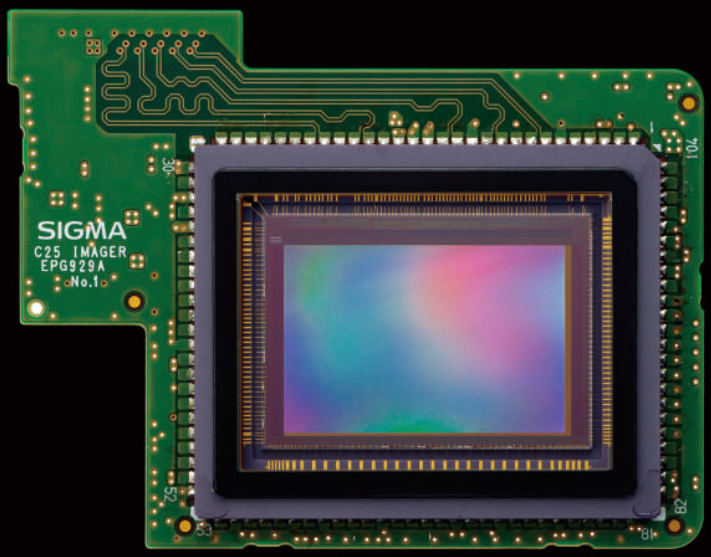
With outstanding chrominance resolution that is free of low-pass filtering and color interpolation, Sigma takes a bold leap closer to the ideal, further enhancing the advantages of a direct image sensor. In terms of technology and image quality, this represents a significant advance.

Here at last is an image sensor for all who have ever dreamed of a digital camera breakthrough that can deliver the ultimate in image quality.

About the generation-name "Merrill"

The Foveon X3® direct image sensor uses technology originally developed by the late Dick Merrill (1949-2008), a brilliant engineer and talented photographer. This revolutionary image capture system reflects both the artistic and technological sides of Merrill's personality.

As an expression of Sigma's passion for photography and in honor of Dick Merrill's genius, we have named the latest generation of the Foveon X3® direct image sensor the Foveon Merrill.



SIGMA

Merrill

FOVEON X3 DIRECT IMAGE SENSOR

An image capture system you can believe in. Now, more than ever

Not another monochrome sensor with color filters

The image sensor in almost all digital cameras, with the exception of Sigma's, is a color filter array (CFA) sensor. The image sensor itself is monochrome; it detects light intensity, but not color. The CFA overlaying the sensor's light-sensitive photodiodes is a mosaic of red, green and blue (RGB) filters in a checkerboard-like grid. Therefore, each photosite, corresponding to a single pixel, receives just one of the three primary colors.

In this kind of system, a 15MP CFA sensor allots 7,500,000 pixels to green light and 3,750,000 each to red and blue light, respectively. Left as is, this checkerboard pattern would create a strange image, so a process called color interpolation is used to blend in neighboring pixel color information. For example, a green pixel gets color information from adjacent blue and red pixels, and so on.

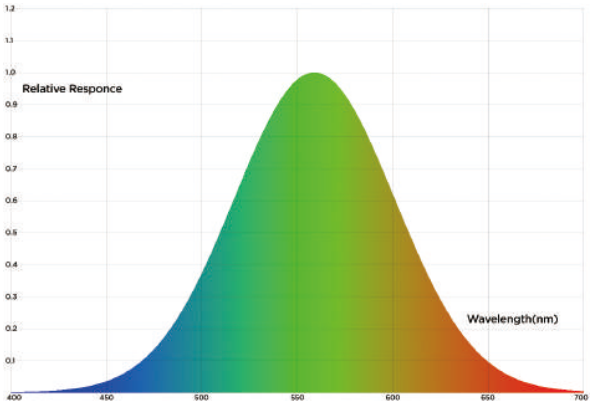


figure 1

CFA sensor relies on eye's sensitivity to green

Why does a CFA sensor assign twice as many pixels to green as to red or blue? Because the eye is most sensitive to green light (figure 1). Human vision depends mostly on wavelengths in the green range to perceive fine detail and luminance resolution.

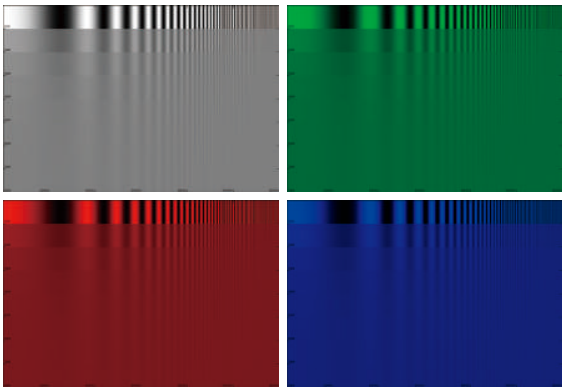


figure 2

The four charts on figure 2 all have the same contrast. Notice how the green background lets you detect fine detail more easily. Most digital cameras take advantage of this fact of human vision. By capturing relatively more green information, they can get by with much less blue and red information.
Thanks to this clever solution, a mere monochrome image sensor can be used to deliver color images of high quality.

So, what's the problem? Though it is true that our eyes are most sensitive to green luminance (sharpness and contrast) information, we also see blue and red chrominance (color) information. But the unequal treatment afforded these colors by a CFA sensor causes a disparity between the luminance resolution and chrominance resolution of the photographic images it generates.

Unique, innovative direct image sensor

Unlike CFA sensors, the image sensor in Sigma digital cameras uses three layers of photodiodes to gather the entire red, green and blue color information of light, forming the world's one and only full color capture system. Since introducing its first-generation digital camera in 2002, Sigma has maintained an unwavering commitment to this unique technology.

The image sensor is made of silicon. When struck by light, silicon absorbs shorter wavelengths (blue) near its surface and longer wavelengths (green, then red) at deeper levels. The direct image sensor takes advantage of this fact, using three layers of photodiodes to capture all colors of light at each pixel location.

All pixels capture full RGB color

This means that a direct image sensor having 15,000,000 pixel locations is

able to capture full red, green and blue color information, as is, at each pixel location. In other words, all 15,000,000 pixel locations can respond to all three primary RGB colors transmitted by the lens. There is no need to assign red, green and blue to separate pixel locations, nor is it necessary to fabricate or eliminate color information during image processing. This full color capture system is, in principle, capable of providing equally high luminance resolution and chrominance resolution.

Since typical photographic subjects do contain an enormous amount of color information, Sigma is convinced that removing any discrepancy between luminance resolution and chrominance resolution is an important key to photographic naturalism.

Unencumbered by a low-pass filter

Another thing: color filter arrays are prone to false color patterns (moire). This problem is caused by interference between repeating patterns of fine lines in the subject and the mosaic pattern of the color filter array itself. Moire is typically prevented by installing a low-pass filter in front of the image sensor.

A low-pass filter works by removing the higher frequencies of light that carry fine detail. This does prevent interference and, therefore moire.

But it also adversely affects resolution and image sharpness. Facing this tradeoff, some cameras use CFA sensors without a low-pass filter, accepting the inevitable color moire patterns as the price to pay for a sharper image.

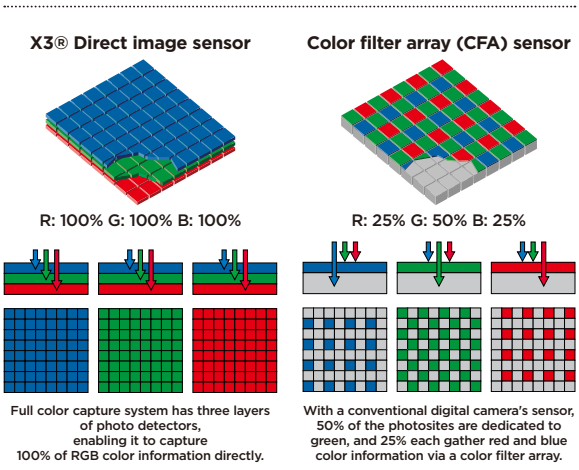
Sigma's direct image sensor design doesn't use color filters, so it doesn't need a low-pass filter to prevent the false colors of moire. The direct image sensor captures the sharp image formed by the lens without losing any information. As a leading lens maker with uncompromising standards of photographic image quality, Sigma believes the ideal capture system is one that receives full color information at each and every pixel location.

Pure color and light: nothing added, nothing lost

In CFA sensor-equipped digital cameras, only one color is captured per pixel location. Color interpolation is required to generate a full color image from these single-color pixels. Over the past decades, color interpolation algorithms have greatly improved, so that interpolation errors are rarely a cause for concern in today's digital cameras.

Nevertheless, light information lost in the capture process can never be perfectly reconstructed. This standard approach cannot fulfill the promise of truly natural images. In sharp contrast, Sigma's direct image sensor has no use for color interpolation and doesn't suffer from its associated problems.

Sigma's technology generates naturally faithful color images without needing to add information. This is why the ambience of the scene is so vividly captured in photos taken with a Sigma digital camera. This reflects Sigma's policy of protecting the integrity of image information — keeping the image pure.


X3® Direct image sensor
Color filter array (CFA) sensor
R: 100% G: 100% B: 100%
R: 25% G: 50% B: 25%
Full color capture system has three layers of photo detectors, enabling it to capture 100% of RGB color information directly.
With a conventional digital camera's sensor, 50% of the photosites are dedicated to green, and 25% each gather red and blue color information via a color filter array.

10 Camera : SIGMA SD1 Merrill / File Type: X3F Raw, Exposure Mode: A - Aperture Priority, ISO Setting: 100, White Balance: Auto, Shutter Speed: 1/200s, Aperture Value: F7.1 Focal Length: 150 mm | Lens: SIGMA APO MACRO 150mm F2.8 EX DG OS HSM

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Camera : SIGMA SD1 Merrill / File Type: X3F Raw, Exposure Mode: M : Manual, ISO Setting: 100, White Balance: Auto, Shutter Speed: 1/60s, Aperture Value: F10 Focal Length: 16 mm | Lens : SIGMA 8-16mm F4.5-5.6 DC HSM

14 Camera : SIGMA SD1 Merrill / File Type: X3F Raw, Exposure Mode: M - Manual, ISO Setting: 100, White Balance: Auto, Shutter Speed: 1/160s, Aperture Value: F4.5 Focal Length: 70 mm | Lens : SIGMA MACRO 70mm F2.8 EX DG

How to make a masterpiece.
Image quality that sparks creativity

Dedicated Dual TRUE II image processing engine

A dual configuration of Sigma's renowned TRUE* II image processing engine powers the SD1 Merrill, bringing out the full potential of information captured by the full color sensor.

Using Sigma's latest re-optimized proprietary algorithm, the Dual TRUE II processes vast volumes of data at blazing speed, generating crisp, high-definition images, scrupulously rendered with immersive spatial realism and profuse color detail. For extra convenience, both RAW data and JPEG data can be recorded simultaneously while shooting.

* TRUE: Three-layer Responsive Ultimate Engine

JPEG convenience with the Sigma touch

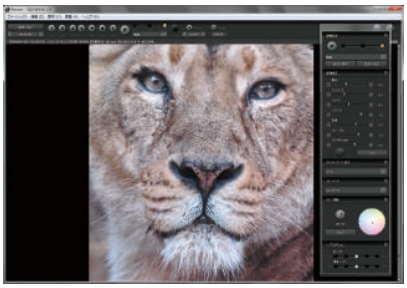
When you want the convenience of JPEG, the SD1 Merrill delivers print-ready images finished to Sigma's own high standards. For purposes of connectivity, photo sharing, social media, and other casual applications, you may find that JPEG meets your needs.

On the other hand, the compact file size of JPEG depends on irreversible "lossy" compression that leaves little room for post-processing creativity. When you want to explore the full artistic potential of the SD1 Merrill, simply choose the RAW image format. This preserves 100% of captured information in all its 46-million-pixel glory, ready for you to give free rein to your creativity.

RAW mode reveals creative realms

Sigma believes that shooting photos is just one stage of creating photographs. The creative process depends on carefully drawing out the latent power of the raw image to faithfully realize your vision in a work of photographic art.

Sigma's .x3f RAW image format files are your creative canvas. They let you work with the full dynamic range, broad color spectrum and delicate gradations of shadow and light that are gathered by the full color capture system. All the information recorded by the amazing X3® sensor is at your command.



Inspired by the virtually boundless potential of SD1 Merrill RAW format data, you embark on a voyage of artistic discovery with the exhilarating freedom to follow your creative muse in any direction.

From image to masterpiece with SIGMA Photo Pro 5.0

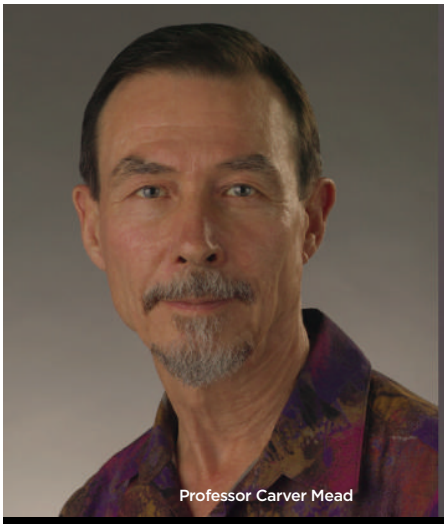
In SIGMA Photo Pro 5 you will find precisely the functions you really need — no more, no less — to finish your photos with professionalism and artistry. With its intuitive and uncluttered interface, this digital darkroom application is unexcelled in RAW data processing performance. Even if you are new to RAW file formats, you will find it easy to use.

The redesigned interface offers greater functionality and convenience to give full expression to your creative ideas and bring out the awesome potential of 46MP images generated by the SD1 Merrill's X3 technology. It also handles SD1 Merrill color mode setting data which optimizes color tone, contrast and other adjustments for various shooting conditions. These settings can be saved in RAW data files.

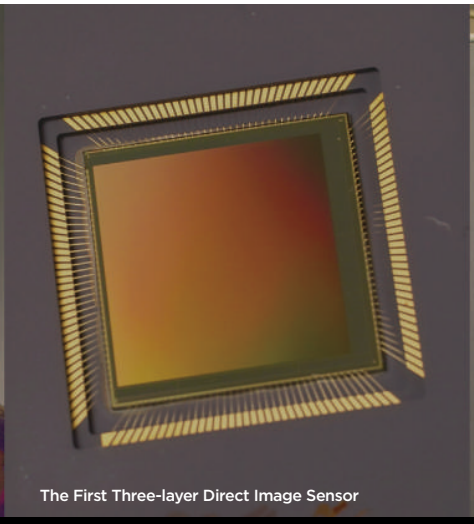
For image correction, the Adjustment Controls Palette offers seven parameters: exposure, contrast, shadows, highlights, color saturation, sharpness, and the X3 Fill Light feature. Together with the two noise reduction parameters and a color wheel, these controls give you the artistic latitude and precision to create the masterpieces that express your artistic vision.

SIGMA Capture Pro camera control software for SD1 Merrill

With Sigma Capture Pro you can use a USB cable to connect the Sigma SD1 Merrill camera to a computer to enable remote control over shutter release and camera settings including aperture and shutter speed, exposure compensation and ISO value. It is also possible to set how many times the shutter is to be released automatically in one operation. Even when the camera is connected to a computer, you can still use the shutter release and other controls on the camera body. Images can be stored on the camera's CF card, the PC's hard drive or both simultaneously.



Professor Carver Mead



The First Three-layer Direct Image Sensor

Professor Mead and Dick Lyon working with the prism camera

The Inside Story

The founding of Foveon, Inc.

The invention of the Foveon X3® direct image sensor by Foveon, Inc. traces its roots back to the research of Caltech physicist, information engineer, and professor Carver Mead. One focus of Mead's research was the modeling in semiconductors of human capabilities. Mead's collaboration with a neural network research group on the simulation of human cognition eventually led to his research on image sensors.

Mead's research led to a business venture supported by some of Silicon Valley's leading firms with both financial and human resources. In August 1997, Foveon was founded, taking its name from an anatomical term: fovea centralis.

Maximal sensitivity to light and color

The fovea centralis is the central portion of the human retina that has the most acute vision and the best color perception. The name "Foveon" signaled the company's commitment to developing the world's most advanced and high-performance image sensors for the professional market. From its first days as a startup company, Foveon gathered the best imaging engineering talent available and engaged in cutting-edge research and development.

Foveon's first product was not an image sensor but instead a complete digital camera. In this original system, a beam-splitter prism assembly separated the incoming light into its three primary colors, passing the red, green, and blue beams through separate color filters and directing them to three large image sensors. An extremely high-resolution image was then assembled from the data of the three colors.

This camera was extraordinary, high-end technology, but it was expensive to manufacture and ultimately too costly for the end user. By the time Foveon stopped prism digital camera production, it had already created a patented technology that would ensure its preeminence in the coming era of image processing research.

The invention of a revolutionary device

Next, Dick Merrill, a leading semiconductor engineering working at Foveon, invented a device that captured all RGB light at each pixel location. Thanks to his special genius and unique career, Merrill had the creativity to realize artistic goals through advanced technology.

His ability as a photographer led to crucial technological contributions, and his passion for artistic expression became the driving force behind the invention and development of Foveon's advanced, full-color image sensors.

A new era in image processing

Merrill's device proved the feasibility of capturing RGB information in each pixel location, but it was not immediately possible to develop an image sensor based on this technology.

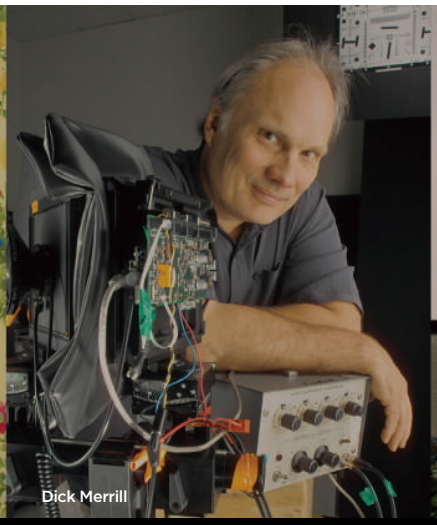
Although it was well known that silicon absorbs shorter wavelengths of light closer to its surface and longer wavelengths of light further from its surface, additional advances in image processing were necessary to make use of this characteristic in creating high-quality images.

That task fell to Foveon Chief Scientist Dick Lyon, an image processing expert with a keen interest in photography.

New products offering ultra-high image quality

Through careful experiments and analysis, Lyon performed theoretical research into the light absorption characteristics of silicon, determining a set of red, green, and blue spectral sensitivity curves for theoretical R, G, and B photodiodes at specific depths. Based on his research, Lyon concluded it was possible to use the technology to produce color images of

Dick Lyon


Dick Merrill

The Sigma SD9 and The Foveon X3® direct image sensor.

a high quality that would satisfy the discerning professional.

Through the efforts of Dick Merrill, Dick Lyon, and many other engineers, Foveon produced the prototype of the Foveon X3® direct image sensor and continued to refine it. At last in 2002, through trial and error, creativity, and powerful resolve, Foveon completed the development of an image sensor ready for a commercial digital camera.

In October 2002, the Sigma SD9 camera debuted, featuring the Foveon X3® direct image sensor. It was and is the world's first single-chip, full-color image sensor.

The Sigma SD series arrives

With its focus on creating lenses of the highest resolution possible, Sigma found the idea of using a resolution-reducing optical low-pass filter—on which conventional digital SLR cameras rely—completely unacceptable.

When Sigma's founder Michihiro Yamaki was CEO, he met Carver Mead of Foveon at Photokina 2000 in Germany, Yamaki recognized the potential of the radically different sensor technology Foveon was developing. Mead remembers the fortuitous meeting and how impressed he was by Yamaki's deep technological understanding, insights and hopes for the future of the photo industry and high standards regarding image quality. Mead and Yamaki shared so many values that there was no hesitation about joining forces.

A lens manufacturer with a philosophy of leveraging its own technology to offer the highest level of product quality, Sigma introduced the sigma SD9, its first digital SLR camera and the first camera in the world to feature the Foveon X3® direct image sensor.

Sigma had accepted the risk of implementing a new technology and selected the Foveon X3® direct image sensor for its flagship digital SLR camera.

Having no need for an optical low-pass filter, the Foveon X3® direct image sensor made full use of the potential of Sigma's high-resolution lenses to produce lifelike images rich in emotion and presence.

Best lens, best image sensor

Having selected the Foveon X3® direct image sensor to bring out the full potential of its lenses, Sigma once again dedicated itself to taking the quality of its lenses to a new level. Aiming not just for a high modulation transfer function (MTF) value, Sigma took a holistic approach to lens development, pursuing the best photographs and best finished-image quality possible.

In November 2008, Sigma purchased Foveon, creator of the Foveon X3® direct image sensor. With strong synergy in goals and philosophy, the two companies make an ideal combination. In addition, Sigma had always focused on developing its own technology and manufacturing its own products, including everything from tiny screws to injection molds. As a unified entity, Sigma and Foveon have continued to pursue the industry's highest level of quality while offering products at a reasonable cost.

This union brought together the shared ideals and philosophy of the two companies, formalizing an alliance that had successfully taken them through many challenges.

Over the past ten years, the transition from film to digital has been an opportunity for Sigma to put its basic principles regarding photography into practice in a new realm of technology.

The way cameras operate may evolve, but the goals of photography are unchanging. Sigma's passion for photography and unwavering dedication to the highest image quality find their expression in each new Sigma product.

Performance true to our principles. Built like a true flagship

Optimized in every detail

At Sigma, camera design has always been guided by one principle: a camera is a precision instrument that should respond faithfully and directly to the photographer's intention. The SD1 Merrill takes this to new heights of perfection, offering even greater possibilities of sophisticated, nuanced expression, while serving the artist as a career partner.

The SD1 Merrill has a magnesium alloy body for rugged durability and resistance to water and dust. This represents a comprehensive approach to maximizing camera performance, just as the internal circuitry is optimized for processing high-resolution data. The user interface is ergonomically engineered to provide intuitive control with extended operational convenience to help the photographer concentrate on the photographic task at hand.

More than any words or specifications, it is only by taking the SD1 Merrill in your hands that you can understand how this camera represents the latest evolution of Sigma's dedication to pushing digital camera design into new dimensions of practical performance.

BODY

Magnesium body
The SD1 Merrill features magnesium alloy-clad body construction. This rigid, tough yet lightweight body securely protects the interior from shock and electromagnetic interference, while adding strength and durability to withstand challenging conditions.

Weather and dust resistance
Controls and joints are sealed to block dust and moisture from entering the card slot, battery room and other parts of the camera interior. This enhances reliability in harsh professional usage situations.

DRIVE MODE

Two-motor system prevents vibration
Using a two-motor system with dedicated motors for mirror-drive and shutter charge reduces the vibration of mirror movement, thereby preventing camera shake. A mirror lock-up mechanism prevents further vibration when the shutter is released. Preventing camera shake is especially important for macro photography and when using ultra-telephoto lenses.

VIEWFINDER

Bright, wide-coverage viewfinder with integral pentaprism
The SD1 Merrill features a pentaprism viewfinder with 98% (vertical and horizontal) coverage, 0.95x magnification

and an 18mm eye point. Diopter adjustment is provided over a range of -3 to +1.5 dpt.

AUTOFOCUS

Precise focus with 11-point twin cross sensor
The autofocus system features an 11-point twin cross sensor. This shifted twin cross type sensor improves AF accuracy.
Selecting the AF point can be done manually or automatically.

77-segment AE sensor for accurate exposure
The SD1 Merrill features a new 77-segment AE sensor using advanced AE algorithms to improve exposure accuracy. Exact control coordinated with the 11 AF points achieves accurate exposure even in difficult lightning conditions.

MEMORY

Uses fast, high-capacity CF cards
The SD1 Merrill accepts TYPE I CF cards. UDMA mode6 compatibility enables fast processing of large amounts of data.

*It is not possible to use TYPE II CF cards or microdrives.

ISO

ISO100 - 6400; Noiseless image processing
The SD1 Merrill captures light effectively and ensures noiseless image processing. The image sensor provides high definition with rich, graduated tones.

EXPOSURE

Exposure management with manual control and auto bracketing
Exposure can be manually adjusted to suit your needs. When difficult lighting conditions make appropriate exposure unclear, auto bracketing lets you take a sequence of shots of the same subject at three or five different exposure levels. Bracketing can be set in 1/3EV increments up to +-3EV(3levels) or +-1.7EV(5 levels).

METERING

Flexible control over metering, The SD1 features four metering modes

77-SEGMENT EVALUATIVE METERING

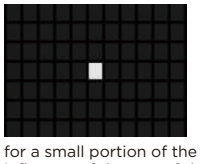
Evaluative metering is suitable for general photography. Even in strong back lighting situations, the camera will give you the correct exposure.

CENTER WEIGHTED AVERAGE METERING

The camera will measure the average luminance of the entire picture area with additional emphasis on the center area. This is ideal when using optional exposure compensation.

CENTER AREA METERING

The camera will measure the luminance of 10% of the entire picture area. This is ideal for metering backlit subjects.



SPOT METERING

The camera will measure the luminance of 1% of the entire picture area. This mode is suitable when you wish to set the exposure for a small portion of the scene and ignore the influence of the rest of the area.

AEL
AF
FUNC
QS
MENU

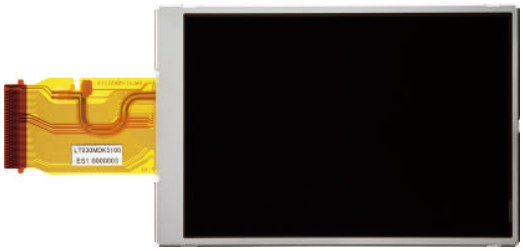
50mm 1:1.4
DG HSM
ISO

AEL
AF
QS
OK

SHUTTER

Focal Plane shutter

The durable focal plane shutter mechanism has a life cycle of over 100,000 exposures and dramatically reduces generation of dust. The photographer can enjoy taking pictures with confidence that the image sensor is clean and protected from dust or dirt originating inside or outside the camera.



DISPLAY

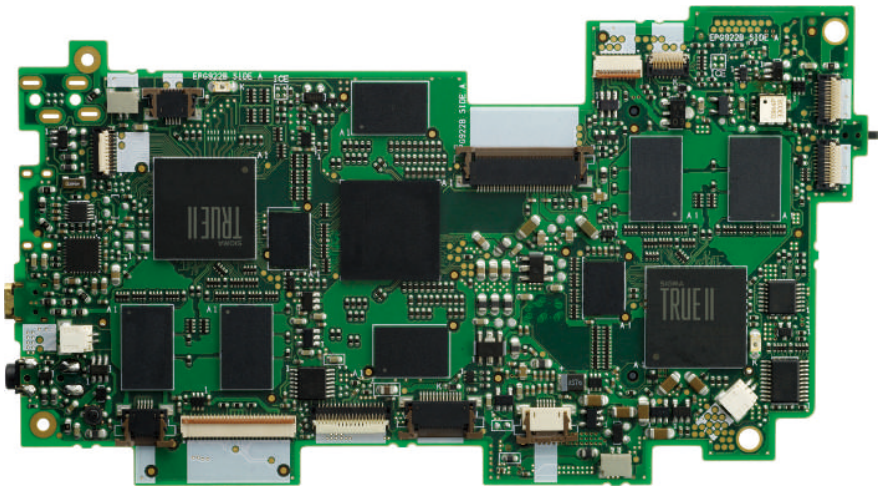
3.0" TFT Color LCD Monitor

The SD1 Merrill camera features a 3.0 inch TFT color monitor. This 460,000 pixel resolution LCD monitor benefits from a wide viewing angle, making it easy to check focusing and composition.

ENGINE

Dual TRUE II image processing engine

The SD1 Merrill incorporates a dual TRUE (Three-layer Responsive Ultimate Engine) II image processing engine which improves processing speed and overall image quality. The unique image-processing algorithm provides high resolving power and reproduces high definition images with richly graduated tones. In addition, the SD1 Merrill can record both RAW and JPEG files simultaneously.



Advanced DDR III buffer for high-speed, high-volume data processing

To handle large volumes of color data at high speed, the SD1 Merrill uses DDR III buffer memory technology, which delivers class-leading performance.
The SD1 Merrill features a continuous shooting speed of 5 frames per second and can capture up to 7 RAW images per sequence in continuous shooting mode.

DUST PROTECTOR

Image sensor protected from dust

Most digital SLR cameras are vulnerable to dust entering the body. If dust and dirt adhere to the image sensor, it may appear in the photos. The lens mount of the SD1 Merrill is equipped with a dust protector and the area around it is sealed to prevent dust from entering the body. Even in the unlikely event of dust adhering to the image sensor, the dust protector can be removed easily for sensor cleaning.

USER INTERFACE

New, intuitive user interface

The improved user interface provides faster and more convenient operation. Aperture and shutter speed can be set by their own dials. The exposure compensation button and exposure mode button are on top of the body for quick access. A Quick Set (QS) menu lets you easily change commonly used functions. To display the QS menu, simply press the QS button. QS menu 1 is for ISO setting, flash mode, metering mode and AF mode; QS menu 2 offers white balance, image quality, image size and color mode.

OK Button setting

You can allocate certain functions to the OK button for added convenience. These functions include Review Image, Rotate Image and Mark Image.

BUILT-IN FLASH

Built-in flash with 17mm angle of coverage

The Sigma SD1 Merrill camera's built-in flash has a guide number of 11 to cover a 17mm lens angle (equivalent to 25.5mm with a 35mm camera). The built-in flash can be synchronized to a shutter speed of up to 1/180 sec. The S-TTL automatic exposure system enables control of advanced flash photography.

BATTERY

Dedicated BP-21 lithium-ion battery

The dedicated BP-21 lithium-ion battery is supplied as standard with the SD1 Merrill. It takes about 150 minutes to fully charge with the supplied BC-21 battery charger. The optional SAC-4 AC adapter lets the Sigma SD1 Merrill run on AC power from a wall socket.

VERSATILE ACCESSORY OPTIONS

Sigma's precision accessories expand your creative horizons while giving you more control and convenience to achieve the results you desire in a wide range of shooting situations.

ELECTRONIC FLASH
EF-610 DG SUPER

The high power EF-610 DG Super flash enables S-TTL automatic flash metering. It has wireless flash connectivity and a high-speed synchronization function which can be used at high shutter speeds.

ELECTRONIC FLASH
EF-610 DG ST

This is a high-powered auto zoom flash featuring automatic flash metering using S-TTL operation. The flashgun effortlessly allows perfect flash shots and includes an automatic zoom and bounce-head function.

Power Grip
PG-31

The PG-31 is a specially designed battery grip which upgrades the battery power of the SIGMA SD1 Merrill by holding two dedicated BP-21 battery packs. This caters for large-volume photography and photography in field. The PG-31 also incorporates a shutter button and therefore becomes a grip for vertical photography when attached to the SD1 Merrill, providing a more assured grip.

Remote Controller
RS-31

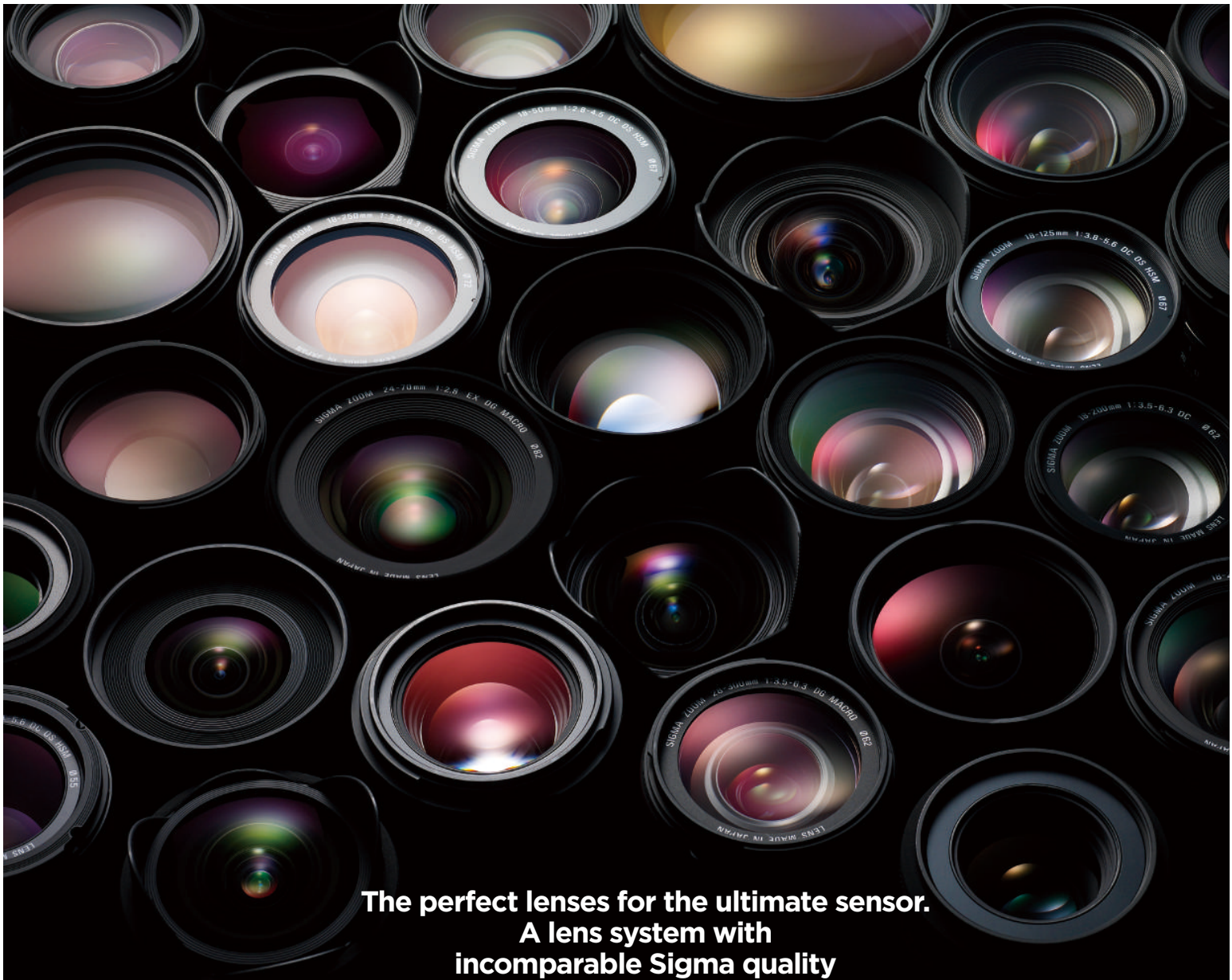
The remote control allows the photographer to take self-portraits or get into group shots. Used with the mirror lock-up function, it can reduce the possibility of image-blurring caused by camera shake, making it particularly useful for macro or telephoto shooting.

Cable Release Switch
CR-21

The CR-21 cable release switch helps prevent camera shake, making it ideal when shooting long exposures. It is also possible to lock the release button.

AC Adapter
SAC-4

This provides a constant electricity supply when shooting in the studio or taking pictures indoors. It is also recommended when connecting the camera to your computer to transfer data.



The perfect lenses for the ultimate sensor. A lens system with incomparable Sigma quality

The lens makes the image

Your choice of lens depends on your subject and how you want to depict it. One of the attractions of a DSLR with interchangeable lenses is the ability to adapt flexibly to every situation and style of expression.

When you have a variety of lenses to choose from, you can make the most of the DSLR as a creative instrument for transforming a photo opportunity into a work of art.

Full lens line of uncompromising quality

For state-of-the-art performance, Sigma's SA mount lenses feature a flare and ghost reducing Super Multi-Layer Coating; HSM (Hyper Sonic Motor); OS (Optical Stabilizer) anti-shake function; FLD ('F' Low Dispersion), ELD (Extraordinary Low Dispersion) and SLD (Special Low Dispersion) glass; aspheric elements; and other cutting-edge technology.

All Sigma standard focal length, wide-angle, telephoto, macro, fisheye, and other lenses are designed to work in synergy with the SD1 Merrill to maximize the full color capture system's exceptional image quality.

Sigma lenses are designed with one aim: to help you take better photos. Sigma offers more than 40 different lens types, distinguished by their exacting optics, smooth focusing and durable stability.

Crafted by masters of lens technology

Sigma has a strict policy of developing essential core technology in-house. For its interchangeable lenses, this encompasses optical design, mechanism design, firmware development, electronic circuit and system design, and mold design.

By making almost all parts in its own integrated manufacturing system, Sigma can assure peerless quality at an accessible price. Every lens that proudly bears the Sigma name is a valuable piece of craftsmanship that brings the spark of life to the photographic images you create.

Having merged the best lens with the best image sensor, we continued to ask the central question: what makes for the best overall photograph?

By pursuing the highest level of excellence in the body of the camera as well, we have maximized the potential of the critical optics and capture system.

SIGMA SD1 Merrill | DIGITAL SINGLE LENS REFLEX CAMERA | PRINCIPAL SPECIFICATIONS

FORMAT

Format	Interchangeable lens SLR camera
Compatible Lenses	SIGMA SA mount interchangeable lenses
Lens Mount	SIGMA SA bayonet mount
Angle of View	Equivalent to approx. 1.5 times the focal length of the lens (for 35mm cameras)

IMAGE SENSOR

Image Sensor	Foveon X3® Direct Image Sensor (CMOS)
Image Size	23.5 x 15.7mm (0.9inch x 0.6inch)
Number of Pixels	Total Pixels 48 MP Effective Pixels 46 MP (4,800 x 3,200 x 3 layers)
Aspect Ratio	3:2

RECORDING SYSTEM

Storage Media	CompactFlash (Type I, UDMA compatible)
Still Image Format	Exif 2.3, DCF 2.0
Recording Mode	Lossless compression RAW data (12-bit, High, Medium, Low), JPEG (High, Medium, Low)
Color Mode	7 types (Standard, Vivid, Neutral, Portrait, Landscape, B&W, Sepia)

File Size

RAW	High	:	Approx. 45 MB	4,704 x 3,136 x 3
	Medium	:	Approx. 24 MB	3,264 x 2,176 x 3
	Low	:	Approx. 12 MB	2,336 x 1,568 x 3
JPEG	High	: Fine	Approx. 10 MB	4,704 x 3,136
		: Normal	Approx. 5.6 MB	4,704 x 3,136
		: Basic	Approx. 4.2 MB	4,704 x 3,136
	Medium	: Fine	Approx. 5 MB	3,264 x 2,176
		: Normal	Approx. 2.7 MB	3,264 x 2,176
		: Basic	Approx. 2 MB	3,264 x 2,176
	Low	: Fine	Approx. 2.5 MB	2,336 x 1,568
		: Normal	Approx. 1.4 MB	2,336 x 1,568
		: Basic	Approx. 1 MB	2,336 x 1,568

WHITE BALANCE

Settings	8 types (Auto, Daylight, Shade, Overcast, Incandescent, Fluorescent, Flash and Custom)

VIEWFINDER

Type	Pentaprism SLR viewfinder
Viewfinder Frame Coverage	98% vertical, 98% horizontal
Viewfinder Magnification	0.95x (50mmF1.4 - ∞)
Eye point	18mm
Diopter Adjustment Range	-3.0 dpt - +1.5 dpt
Focusing Screen	Fixed, all matt screen
Mirror	Quick return
Depth of Field Preview	Depth of field preview button

AUTO FOCUS

Auto Focus Type	TTL phase difference detection system
AF Point	11 points twin cross sensor
AF Operating Range	EV -1 to +18 (ISO100)
Focus Mode	Single AF, Continuous AF (with AF motion prediction function), Manual
AF Point Selection	Automatic Selection, Manual Selection
Active AF point indicator	Superimposed in viewfinder
AF Assist Light	Orange Color AF Assist Light
Focus Lock	AF button is pressed or shutter release button is pressed halfway.

EXPOSURE CONTROL

Metering Systems	77 segment Evaluative Metering, Spot Metering, Center Area Metering, Center-Weighted Average Metering
Metering Range	EV 1 to 20 (50mm F1.4 : ISO100)
Exposure Control System	[P] Program AE (Program Shift is possible), [S] Shutter Speed Priority AE, [A] Aperture Priority AE, [M] Manual
ISO Sensitivity	ISO 100-6400
Exposure Compensation	± 3 EV (in 1/3 stop increments)
AE Lock	AE lock button is pressed or shutter release button is pressed halfway
Auto Bracketing	Three or Five frames (in 1/3 steps, Appropriate Exposure-Under Exposure-Over Exposure)

SHUTTER

Shutter Type	Electronically Controlled Focal Plane Shutter
Shutter Speed	1/8000 – 30 sec., Bulb (up to 30 sec. With Extended Mode: 2 min.)
External Flash Sync.	X-Sync (1/180)

DRIVE SYSTEM

Drive Modes	[1] Single, [2] Continuous, [3] Self-Timer (2sec./10sec.), [4] Mirror Lock-up
Continuous shooting speed	High : 5 frames/sec. Medium : 6 frames/sec. Low : 6 frames/sec.
Continuous buffer	High : Max. 7 frames Medium : Max. 14 frames Low : Max. 14 frames

FLASH

Type	Manual Pop-up Built-in flash
Built-in Flash Guide No.	GN11
Built-in Flash Coverage	17mm lens angle covered
Flash Metering System	S-TTL Auto Flash
Flash Compensation	± 3EV (1/3 stop increments)
Compatible Flashguns	EF-610DG SUPER, EF-610DG ST, EM-140 DG
Sync Terminal	Available
Connectivity	Hot shoe (contact X synchronization at 1/180 sec. or less, with dedicated flash linking contact)

LCD MONITOR

Type	TFT color LCD monitor
Monitor Size	3.0"
LCD Pixels	Approx. 460,000
Coverage	100%

PLAYBACK

Reviewing Images	Single frame display, Multi display [9 frames], Zoom, Slide Show
Highlight Display	Available
Histogram	Available

MENU

LCD Monitor Language	English / Japanese / German / French / Spanish / Italian / Chinese (Simplified) / Chinese (Traditional) / Korean / Russian / Nederlands / Polski / Português / Dansk / Svenska / Norsk / Suomi

INTERFACE

PC/IF	USB (USB2.0)
AUDIO/VIDEO	Video Out (NTSC/PAL)

POWER SOURCE

Power	Li-ion Battery Pack BP-21, Batterry Chager BC-21, AC Adapter SAC-4 (optional)

DIMENSIONS AND WEIGHT

Dimensions	145.5mm/5.7"(W) x 113.5mm/4.4"(H) x 80.0mm/3.1"(D)
Weight	700g/24.7oz. (without battery and card)

OPERATING ENVIRONMENT

Operating Temperature	0 - +40 ℃
Operating Hunidity Range	85% or lower

ACCESSORIES

• Li-ion Battery BP-21, • Battery Charger BC-21, • USB Cable, • Video Cable,
• Neck Strap • Eye Cap, • Body Cap, • Eyepiece Cap,
• SIGMA Photo Pro Disc, • SD1 Merrill Instruction Manual

OPTIONAL ACCESSORIES

• AC Adapter : SAC-4, • Power Grip PG-31,
• Remote Controller : RS-31, • Cable Release Switch : CR-21,
• Electronic Flash : EF-610 DG SUPER, EF-610 DG ST, EM-140 DG

The appearance and specifications are subject to change without notice.

www.SIGMA-SD.com

SIGMA

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Notice: To avoid damage or injury, please read the instruction manual carefully before using the camera.

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